

**THE OFFICE OF REGULATORY STAFF  
SURREBUTTAL TESTIMONY  
OF  
DR. DOUGLAS H. CARLISLE  
OCTOBER 28, 2013**



**DOCKET NO. 2013-201-W/S  
APPLICATION OF UTILITIES SERVICES  
OF SOUTH CAROLINA, INC., FOR  
ADJUSTMENT OF RATES AND  
CHARGES AND MODIFICATIONS OF  
CERTAIN TERMS AND CONDITIONS  
FOR THE PROVISION OF WATER  
AND SEWER SERVICE**

**SURREBUTTAL TESTIMONY OF**  
**DR. DOUGLAS H. CARLISLE**  
**FOR**  
**THE OFFICE OF REGULATORY STAFF**  
**DOCKET NO. 2013-201-WS**

**IN RE: Application of Utilities Services of South Carolina, Inc., for Adjustment of Rates  
and Charges and Modifications of Certain Terms and Conditions for the Provision  
of Water and Sewer Service**

**Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

A. I will address the concerns of Ms. Pauline Ahern, Mr. Steven Lubertozi, and Mr. Dylan D'Ascendis, in that order.

**Q. ARE YOUR OBSERVATIONS ABOUT UTILITY, INC.'S ("UP") LONG-TERM DEBT  
A CENTRAL PART OF YOUR ANALYSIS?**

A. No. Most of the return variation in my testimony depends on my Return on Equity ("ROE") analysis.

**Q. DO YOU ACCEPT MS. AHERN'S STATEMENT THAT THE LOAN INTEREST  
DOES NOT ACCUMULATE AND IS CURRENTLY BEING REPAYED?**

A. I accept her statement that "as the Company informs me, the interest on the notes is not accumulating and adding to the principal" and I also accept her statements that Utilities, Inc. ("UP") is currently paying that interest. That UI is paying interest now without paying down the principal is hardly better than making the same interest-only payments later. It amounts to the same thing: the UI loan is expensive and the ratepayers of its subsidiaries pay for it. If anything, this information places the situation in a worse light because it means the

1 ratepayers have already been paying straight interest without paying down on the principal. I  
2 calculate that the interest-only payments add an additional \$59,220,000 in interest payments  
3 for UI ratepayers (Surrebuttal Exhibit DHC-1). That it is being paid now is worse because of  
4 the time value of money. Most people would rather have their money now. Unfortunately,  
5 Utilities Services of South Carolina's ("USSC" or "the Company") ratepayers have already  
6 been paying for their allocation of this debt.

7 If Ms. Ahern inferred from my testimony that I meant ratepayers would have to pay  
8 interest twice on the interest-only portion, that is incorrect. I stated that "it acts like principal,"  
9 which is correct in that it has become a "new basis to be repaid." My Direct Testimony does  
10 not state that it was a new basis for calculating interest payments. My point was, and still is,  
11 that more money has to be paid than the face interest rate would indicate.

12 **Q. DO YOU AGREE WITH MS AHERN'S STATEMENTS ABOUT THE**  
13 **REASONABLENESS OF THE DEBT RATE?**

14 A. Ms. Ahern asserts that: (1) the original loan was prudent; (2) the interest rate was  
15 reasonable at the time of the loan; and, (3) the interest rate continues to be reasonable by  
16 today's standards. Although these assertions appear to address the issues I have raised, they  
17 actually sidestep my argument.

18 The logic of the first point is that, if a company's action is not deemed imprudent,  
19 then it is beyond question and the Public Service Commission of South Carolina has no  
20 latitude in assessing the financial management of the companies whose rates it approves. The  
21 management of finances is a continuous process, however, so it must be assessed as an  
22 on-going activity.

23 The second point – the interest rate was reasonable at the time of the loan – is not  
24 directly relevant to my concern that this loan is the only Long-Term Debt allocated to USSC

1 and it is governed by interest-only and make-whole provisions. I stress “only” Long-Term  
2 Debt because this loan was undertaken when interest rates were high and no other loan has  
3 been undertaken since. Although Ms. Ahern has an analysis of bond rates, she has not offered  
4 any analysis of what rate UI could have obtained if its loan had been secured by a mortgage on  
5 its properties, rather than supported by a collateral trust. Such a comparison would provide a  
6 true comparison of interest rates. Moreover, we still face the lack of any action by UI to  
7 mitigate the impact of this loan.

8 Since the loan began, rates have fallen and, rather than take advantage of lower rates,  
9 UI discontinued its Short-Term Debt. Ms. Ahern’s comparison of rating agency criteria and  
10 bond rates shifts the focus away from the trends that cast UI’s debt deal in a bad light and  
11 toward major corporations not comparable to UI. Consider the case of a company with fewer  
12 customers than UI, York Water Company (see Surrebuttal Exhibit DHC-2). York Water  
13 Company’s Long-Term Debt rate has averaged 100 basis points below UI’s despite the  
14 former’s customer base of about 63,000 customers (see Direct Testimony Exhibit DHC-9, p.9  
15 of 10), compared to UI’s approximately 300,000 customers.<sup>1</sup> There are also at least two South  
16 Carolina water companies with lower interest rates right now. They are smaller than UI.

17 **Q. DOES MS. AHERN’S EXHIBIT PMA-2 PROVE THE REASONABLENESS OF**  
18 **USSC’S DEBT RATE?**

19 A. No. Ms. Ahern’s Surrebuttal Exhibit PMA-2, Schedule 3R, Page 2 of 2 shows that,  
20 for four years, public utility Baa bonds have paid a rate less than 5.58%. Further consideration  
21 raises the question of whether the conditions on these bonds were as stringent as UI’s debt,  
22 including the existence of make-whole provisions and interest-only periods. It is far from  
23 clear that loans are directly comparable to bonds, an assumption implicit in Ms. Ahern’s

---

<sup>1</sup> <http://www.uiwater.com/>

1 argument. Even if that issue were satisfactorily answered, the real problem remains that UI  
2 took on a single, large debt at the height of interest rates. This loan coincides with a change in  
3 ownership of UI, and UI has taken on no Long-Term Debt since the change. Before  
4 undertaking this large loan, UI had multiple debt issuances. The unreasonableness lies in the  
5 “lumpiness” of the debt, the lack of mitigation through measures such as rolling-over  
6 short-term debt, and the unfavorable terms of the debt.

7 **Q. WHY DID YOU RECOMMEND THAT THIS COMMISSION PLACE MORE**  
8 **WEIGHT ON THE LOWER END OF YOUR ROE RANGE?**

9 A. As Ms. Ahern stated, USSC’s customers are already paying pure interest on UI’s loan.  
10 The holding company is, therefore, a burden to USSC’s ratepayers due to UI’s Long-Term  
11 Debt rate. The only incentive UI has for managing its debt better is for it to be discussed  
12 during a rate-case. For this reason, I have recommended that the Commission consider the  
13 lower half of my range.

14 **Q. DO YOU AGREE WITH MR. LUBERTOZZI’S STATEMENT THAT THE**  
15 **EXCLUSION OF THE 0.02% OR .0002 INCREMENT TO LONG-TERM DEBT**  
16 **WOULD MEAN THAT USSC “WOULD NEVER EARN ITS AUTHORIZED**  
17 **RETURN” (Lubertozzi Rebuttal, page 4 of 7, lines 5 & 6)?**

18 A. No. Mr. Lubertozzi’s reasoning seems to assume that this Commission must accept  
19 everything that the Company submits, including this 0.02% adder to its Long-Term Debt rate.  
20 In fact, if this Commission chooses to exclude it, the return approved by the Commission  
21 would never include this adder and the Company would have an opportunity to earn its return.  
22 Somewhat contradictorily, Mr. Lubertozzi also states that, “the regulatory process is  
23 inadequate by design” and cites the low end of my range, 8.86% and the high end of Mr.  
24 D’Ascendis’s range, 11.45%, and concludes, “at the end of the day, those are arguments are

moot if the company has zero chance of actually earning its authorized ROE.” Based on this theory, the inclusion of the 0.02% would appear to be irrelevant.

**Q. DO YOU THINK THAT THIS COMMISSION SHOULD IMITATE THE RULINGS IN OTHER STATES REGARDING THIS LONG-TERM DEBT ADDER?**

A. No. If mechanical imitation of other states were the practice, decisions would be a matter of averaging decisions elsewhere. Whatever the impact of other states’ policies regarding capital structure, cost rates, and ROE, I do not believe that mechanically imitating other states is desirable. Instead, I submit to the decisions of this Commission.

**Q. WHY DO YOU USE HISTORICAL DATA TO HELP CALCULATE THE GROWTH COMPONENT IN YOUR DISCOUNTED CASH FLOW (“DCF”) ANALYSIS?**

A. I use such data because historical data is available to investors, as are analysts’ forecasts. To suggest that investors ignore historical data is to suggest the improbable, even – given its ubiquity – almost the impossible. In fact, the interaction between historical patterns and emerging ones could be a source of improving choices of investments and there is empirical support for this supposition.<sup>2</sup> Using only analysts’ predictions contradicts one of the central premises of economics: markets are efficient and incorporate all available information.

**Q. DID YOU ERR IN USING HISTORICAL DATA?**

A. No. I find Mr. D’Ascendis’s rebuttal puzzling for the following reasons: (1) the widespread availability of historical data; (2) his results when he excluded historical data and used only analysts’ estimates; (3) his results when he used historical data; (4) his use of quotations from scholars. I will elaborate on each reason.

---

<sup>2</sup> See, for example, A New Approach to Predicting Analyst Forecast Errors: Implications for Investment Decisions, Eric C. So, Stanford Graduate School of Business at: <http://kelley.iu.edu/feaconference/papers/Paper Upload So E 76655.pdf>

1           (1) Availability of historical information. Despite asserting that investors are  
2 exclusively influenced by analysts, Mr. D'Ascendis includes, as many ROE witnesses do, a  
3 Value Line exhibit in his Direct Testimony (D'Ascendis Direct Testimony Exhibit DWD-1,  
4 Schedule 3, pages 2-10 of 10). These pages contain large amounts of historical data, yet Mr.  
5 D'Ascendis indicates that investors ignore this data and that Value Line continues to publish it  
6 despite its customers' indifference.

7           (2) Results using analysts' estimates. When Mr. D'Ascendis used only analysts' data,  
8 his DCF result was lower than mine. His result of 8.86% (Direct Testimony Exhibit DWD-1,  
9 Schedule 3, page 1 of 10) relies exclusively upon analysts' opinions. His DCF result was 74  
10 basis points lower than mine.

11           (3) Results using historical data. Despite his concern about using historical data to  
12 calculate likely returns, Mr. D'Ascendis includes such data in his modified Risk Premium and  
13 CAP-M, (Direct Testimony Exhibit DWD-1, Schedule 5, page 10 of 10). He uses "Arithmetic  
14 Mean Holding Period Returns on the Standard & Poor's Utility Index 1926-2012" on line 1  
15 and the Predictive Risk Premium Model<sup>TM</sup> (PRPM<sup>TM</sup>), which is derived, according to his  
16 footnote, from "the risk premium of the monthly total returns of the S&P Utility Index and the  
17 monthly yields on Moody's A rated public utility bonds from 1928 - 2012." In other words, he  
18 analyzed historical data, which he claims should not be used. Notably, Rebuttal Testimony  
19 DWD-2, page 6 cites an article included as an exhibit (DWD-2, Schedule 2-R) that promotes  
20 selecting comparable companies by a new method. The steps of this method include the  
21 following statement on page 5 of 6 of the exhibit, "We believe it is logical to evaluate both  
22 historical and projected return rates because it is reasonable to assume that investors avail  
23 themselves of both." That is exactly what I do in my DCF. Mr. D'Ascendis's PRPM<sup>TM</sup> result,  
24 using historical data, is higher than his DCF, which uses only analysts' predictions. His

1 higher returns, therefore, are based on a direct contradiction of his criticism of my use of  
2 historical data.

3 (4) Use of quotations from scholars. The rebuttal testimony that criticizes my use of  
4 both historical data and analysts' predictions cites four sources. None of them support the  
5 criticism. I will consider each source in turn.

6 a) Myron Gordon. Nowhere in the quotation of Myron Gordon is there a statement  
7 that historical data should be ignored, only that analysts' estimates are better "for the  
8 explanation of variation in price among common stocks" than "financial statements." Since I  
9 do not use price fluctuations, except inasmuch as they indirectly affect dividend yields, this  
10 conclusion does not apply to my analysis.

11 b.) Roger Morin. Morin's statements do not preclude the use of historical data. He  
12 states that "investors rely upon analysts' forecasts to a greater extent than on historic data  
13 only." In other words, he is comparing exclusive use of historical data to exclusive use of  
14 analysts' estimates. I used neither exclusively in my analysis. Morin, moreover, does not  
15 state whether "historic[al] data" refers to a naïve, straight-line projection. If so, it is quite  
16 likely that analysts' projections are better at least some of the time, but it is possible that a  
17 more sophisticated use of historical data might be as useful or more useful than analysts'  
18 estimates alone. Analysts can be overconfident.<sup>3</sup> We must keep in mind that the "Great  
19 Recession" was not captured by most analysts so as to prevent large losses by investors.

20 c.) Jeremy Siegel. The quotation from Jeremy J. Siegel addresses, not historical data  
21 per se, but rather the perception that cash dividend amounts, dividend policy, and general  
22 economic growth are poor predictors of investors' returns compared to per-share data,  
23 especially earnings per share. If Mr. Siegel thinks that historical data should not be used, it is

---

<sup>3</sup> Wei Xiong, "Bubbles, Crises, and Heterogeneous Beliefs," Princeton University Working Paper [to become a chapter in a book], pp. 18-19.



1 not evident from this quotation. In fact, one could interpret Mr. Siegel's quotation to be  
2 critical of forecasts of economic growth as opposed to historical earnings per share, an  
3 interpretation consistent with his long-run perspective. In any event, I used change in  
4 per-share data, so, at least in that respect, my approach would meet with Mr. Siegel's  
5 approval.

6 d.) Burton Malkiel. The most interesting source cited to challenge my use of both  
7 analysts' estimates and historical data is the study by John G. Cragg and Burton G. Malkiel  
8 back in 1982. One needs to consider what Dr. Malkiel says in his book, A Random Walk  
9 Down Wall Street:

10 No one can consistently predict either the direction of the stock market or the  
11 relative attractiveness of individual stocks and thus no one can consistently  
12 obtain better overall returns than the market. And while there are  
13 undoubtedly profitable trading opportunities that occasionally appear, these  
14 are quickly wiped out once they become known. No one person or  
15 institution has yet to produce a long-term, consistent record of finding  
16 money-making, risk-adjusted individual stock-trading opportunities,  
17 particularly when they pay taxes and incur transaction costs.<sup>4</sup>

18 Later in the same book, Malkiel continues:

19 ...if it was easy to spot predictable patterns in security returns or anomalous  
20 security prices, then professional fund managers should be able to beat the  
21 market. Direct tests of the actual performance of professionals, who are  
22 richly incentivized to outperform the market, should represent the most  
23 compelling evidence of market efficiency.

---

<sup>4</sup> Burton G. Malkiel, A Random Walk down Wall Street, New York: W.W. Norton, 2003, p.231.

1                   There is a remarkably large body of evidence suggesting that  
2                   professional investment managers are not able to outperform index funds that  
3                   simply buy and hold the broad stockmarket portfolio.<sup>5</sup>

4                   Thus, Malkiel, an expert cited to criticize my blending historical data and analysts'  
5                   estimates, has declared that research shows that analysts fail to predict either the overall  
6                   market or individual stocks' returns.

7                   This discussion has shown that a closer look at the sources cited to dispute my use of  
8                   historical data shows that the sources, as cited, do nothing of the kind. The main thrust of all  
9                   of these sources is that one should not blindly rely on certain kinds of historical data. My  
10                  analysis does not.

11   **Q.   DO YOUR COMPARABLE EARNINGS METHOD ("CEM") SAMPLE-SELECTION**  
12   **CRITERIA MEASURE BOTH SYSTEMATIC AND NON-SYSTEMATIC RISK?**

13   A.           Yes. Beta (" $\beta$ ") measures systematic risk, that risk which is related in some degree to  
14                  that of the overall market. Diversity of investments measures non-systematic risk, those  
15                  business and financial risks particular to individual companies. Thus, my CEM group is  
16                  comparable and, given that the prices of inputs they face to produce their goods and services  
17                  are reflected in their book value, their earnings should be comparable too. Just to make sure  
18                  that systematic risk is neutralized, I also made sure that the  $\beta$ -range of my CEM group had not  
19                  strayed too far from that of my DCF Proxy Group.

20   **Q.   SINCE YOUR CEM SAMPLE-SELECTION CRITERIA MEASURE BOTH**  
21   **SYSTEMATIC AND NON-SYSTEMATIC RISK, IS MR D'ASCENDIS'S METHOD**  
22   **MORE ROBUST?**

---

<sup>5</sup> Malkiel, p.245.

1 A. No. He claims his is more “robust” for four reasons: (1) it measures both systematic  
2 and non-systematic risk; (2) his method uses market data; (3) regression analysis, with some  
3 emphasis on the purported value of standard errors, captures all risks better; and, (4) his  
4 smaller CEM proxy group is superior. I will address each point.

5 (1) The existence of  $\beta$  and its use by company analysts to assess appropriate  
6 borrowing costs for subsidiaries and other components of companies, indicates that it has a  
7 recognized validity. Mr. D’Ascendis does not state that  $\beta$  is a poor measurement but he  
8 suggests it by saying that the ECAP-M is superior, however he also uses a regular CAP-M in  
9 his analysis.

10 (2) Mr. D’Ascendis uses market data to select his CEM group and he claims that I do  
11 not use market data to select mine.  $\beta$ , however, is a direct product of market data and I used it  
12 to select my CEM group. It bears restating that Mr. D’Ascendis used historical data to select  
13 his group, despite his objections elsewhere to using such data. Although there is no standard  
14 CEM methodology, it is based on book value<sup>6</sup>, which he does not use. If it is an error to use  
15 book value, then it is an error to use the CEM.

16 (3) USSC’s ROE witness’s claim to capture all risk must come from the following  
17 sources: 1)  $\beta$  does not capture systematic risk; 2) a diverse portfolio does not capture non-  
18 systematic risk; 3) he is using superior measures because he is using market data; and, 4) he is  
19 using a superior analysis because he uses regression analysis, unadjusted  $\beta$ , and standard  
20 errors. I have already addressed the first three points, so that leaves his use of regression and  
21 standard errors. Regression is the mathematical relationship between data representing a

---

<sup>6</sup> David Parcell, The Cost of Capital – A Practitioner’s Guide, 2010 edition, Society of Utility and Regulatory Financial Analysts, pp. 115-116.

Note: The discussion on these pages is worded so that the use of book value does not appear optional: “The Comparable Earnings Method is designed to measure the returns expected to be earned on the original cost book value of similar risk enterprises.”

1 dependent variable and an independent or multiple independent variables. A regression  
2 formula attempts to predict exactly the dependent variable of ROE. Departures from a  
3 perfectly matched relationship are measured by standard errors. If one believes that these  
4 errors measure non-systematic risk, idiosyncratic to individual companies and only that risk,  
5 then Mr. D'Ascendis's point is strengthened, but his objections are not valid if: (a) these  
6 "errors" might also be measuring random variation – sometimes called "statistical noise" – in  
7 addition to non-systematic risk; (b) it is very difficult to eliminate this noise; and, (c) the  
8 amount noise might fluctuate considerably. A look at the CEM group used by Mr.  
9 D'Ascendis deepens this concern.

10 (4) Mr. D'Ascendis commends his proxy group (Schedules 7 and 8 of Exhibit  
11 DWD-1) as a better group, yet half of the companies in his proxy group are in my CEM group  
12 (see Surrebuttal Exhibit DHC-3). A quarter of his companies are in financially related  
13 activities. Given the financial roots of the Great Recession from which we have not fully  
14 emerged, inclusion of financial institutions in a proxy group is ill advised, as these companies  
15 almost surely will not be typical. One stock in particular, Annaly Capital, has an extremely  
16 large 13.34% dividend yield, which is hardly typical of any kind of stock. The results Mr.  
17 D'Ascendis obtains from using the group are very high due to his applying three different  
18 methods, which is in disregard to established CEM approaches. Moreover, each method has  
19 an approach that greatly inflates his result, especially the DCF portion, which produces an  
20 ROE of 11.29%. Thus, Mr. D'Ascendis does not have a CEM method and his proxy group is  
21 less diversified, making it more vulnerable to non-systematic risk.

22 **Q. DID YOU ERR IN YOUR CALCULATION OF THE RETURN ON THE MARKET IN**  
23 **YOUR CAP-M?**

1 A. No. Mr. D'Ascendis believes that I should have used the "Total Value Weighted  
2 Index" long-term total return of 9.6%.

3 It is important to understand a little of the methodology of the SBBI 2013 Classic  
4 Yearbook ('SBBI'). Much of its analysis based upon the premise that there is a Small  
5 Company Premium. To support this premise methodologically, on page 95, SBBI states that  
6 its historical data on companies' returns is broken down into tenths or "deciles," of an equal  
7 number of companies, grouped together by their size.<sup>7</sup> Ensuring that these deciles continue  
8 over time to contain equal numbers of companies and companies of the same size presents a  
9 challenge. Bankruptcies, mergers, births of new companies, and economic growth of  
10 companies into higher deciles or decline into lower deciles can affect the number of  
11 companies in each decile and their assignment to the proper decile. To remedy this problem,  
12 SBBI rebalances the deciles each quarter.

13 SBBI's method should be considered by Mr. D'Ascendis who quotes his direct  
14 testimony, "As I stated at page 29, line 11 through page 30, line 3, smaller companies tend to  
15 be more risky, causing investors to expect greater returns as compensation for that risk,  
16 consistent with the basic financial principles of risk and return." Consistent with that belief,  
17 Mr. D'Ascendis adds 60 basis points to his recommended ROE for USSC. Despite his  
18 support of a Small Company Premium, Mr. D'Ascendis argues that my averaging of the  
19 deciles is, "not correct, because that average produces higher than expected results due to the  
20 higher returns of smaller companies which are weighted more heavily." I do not agree with  
21 this statement. Small companies are not weighted more heavily by SBBI; they receive a  
22 weight equal to that of large companies. In fact, he asserts my analysis should have used the

---

<sup>7</sup> In addition to p.95 of SBBI, see also the definition of "decile" on page 290. "One of 10 portfolios formed by ranking a set of securities by some criteria and dividing them into *10 equally populated subsets*. The New York Stock Exchange capitalization deciles are formed by ranking the stocks traded on the Exchange by their market capitalization." [italics added]

1 “NYSE/AMEX/NASDAQ Total Value Weighted Index.” This Index, as its name suggests,  
2 gives large companies receive a heavier weight.

3 It is a contradiction that Mr. D’Ascendis asserts a premium for small companies but  
4 objects to the use of an average that diminishes their equality. Even this contradiction is not as  
5 troubling as the disregard for investors’ behavior that this argument implies. A small  
6 company whose stock and dividend payments produce a 70% return in ten years produces just  
7 as much return for an investor who invests \$1,000 as a large company with a 70% return on a  
8 \$1,000 investment over the same period. Investors invest in individual companies, so  
9 individual companies should be treated equally.

10 **Q. DO YOU AGREE THAT THERE IS A SMALL COMPANY PREMIUM?**

11 A. No. I do not believe that a Small Company Premium applies because of the  
12 well-known distortion known as Survivorship Bias. It can be true that, as a group, small  
13 companies bring higher returns, yet it is impossible to invest in such a way as to realize those  
14 returns. The reason some companies may get a higher return is that not all companies survive.  
15 Investors could realize a higher return if they could identify those companies that do not go  
16 bankrupt, do not get acquired by other companies, do not grow into higher deciles, or do not  
17 become small by decay and decline.

18 Even if all the issues to make the Small Company Premium were resolved by  
19 overcoming the problem of Survivorship Bias, several other practical problems remain. If  
20 there were a foolproof method of identifying such companies, investors would rush into such  
21 investments and bid down the premium until it became negligible. Then too, since regulated  
22 utilities are insulated against most major threats, their likelihood of bankruptcy is considerably  
23 diminished; so one kind of risk associated with small companies is largely eliminated.  
24 Consistent with this reasoning, empirical research shows that there is no premium for small

utility companies.<sup>8</sup> Evidence shows that, when Survivorship Bias is ignored, the apparent premium still disappears for long periods and, when the transient nature of company size is factored in, the premium disappears completely.<sup>9</sup> There are also studies that have found there is no basis at all for a Small Company Premium.<sup>10</sup> Since there is no Small Company Premium, there is no need for an ECAP-M, which double-counts risk and which, to my knowledge, has never received an academically refereed review.

**Q. FOR YOUR CAP-M, DO YOU AGREE THAT THE ARITHMETIC AVERAGE SHOULD BE USED RATHER THAN THE COMPOUND ANNUAL GROWTH RATE OR GEOMETRIC AVERAGE?**

A. No. The arithmetic average does not reflect realizable returns and assumes that investors are naïve. Moreover, it exaggerates the effects of fluctuation. Here is a simple example:

	Amount	Arithmetic Average	Geometric Average
Starting point	\$1,000.00		
After one period	\$2,000.00	100%	100%
Ending Amount	\$1,000.00	-50%	-50%
Overall average		50%	0%

The investor who believed in the arithmetic average would expect to have  $\$1,000.00 * 150\%$ <sup>11</sup> = \$1,500.00 and would be bitterly disappointed to discover that only the same \$1,000.00 was

<sup>8</sup> Annie Wong, "Utility Stocks and the Size Effect: An Empirical Analysis," *Journal of the Midwest Finance Association*, 1993, PP. 95-101.

<sup>9</sup> Ching-Chih Lu, "The Size Premium in the Long Run," Taipei, Taiwan: National Chengchi University, December 25, 2009, [entire].

<sup>10</sup> Richard Roll, "On Computing Mean Returns and the Small Firm Premium," *Journal of Financial Economics* (1983), pp. 371-86.

Jay Ritter, "The Biggest Mistakes We Teach," *Journal of Financial Research* (summer 2002).

<sup>11</sup>  $100\% + 50\% = 150\%$ , since the investor wants to know the gain above the starting point of 100%

1       there. The investor who calculated that  $\$1,000.00 * 100\%^{12} = \$1,000.00$ , while disappointed,  
2       would not be surprised. An investor wants to know the total gain that can be expressed in  
3       realizable annualized percentage gains. While investors doubtless want to know what their  
4       stock has done in the past, every investor wants to know where it will wind up. To use Mr.  
5       D'Ascendis's analogy, investors are less interested in all the historical events of every battle  
6       and more interested in knowing who won the war.

7               There is evidence that people know that simple averages do not convey enough  
8       information. As long as a sample of events or objects seems typical this concern does not  
9       surface; but, when something might be atypical, this concern emerges. An average room full  
10      of people might be a fit sample for calculating average income, using an arithmetic average,  
11      until Bill Gates walks in. When the typicality of events and facts is unknown, we use other  
12      measurements of central tendency, such as the median, the standard deviation, or the  
13      geometric mean. These measurements all serve to reduce the undue influence of atypical  
14      events or facts, also called outliers. Not using these measurements inflates the effects of what  
15      is atypical. The arithmetic mean or simple average is always higher than the geometric mean  
16      or compound annual growth rate except when there is no volatility and they are the same. The  
17      arithmetic mean exaggerates the impact of volatility.

18   **Q.    IS MR. D'ACENDIS CORRECT WHEN HE STATES THAT YOU "AGREE THAT**  
19   **USSC SHOULD BE TREATED AS A STAND-ALONE ENTERPRISE"?**

20   **A.**       To answer this question it is crucial to see what I stated in my testimony and how Mr.  
21       D'Ascendis quoted me. In his rebuttal he states that I, "agree that USSC should be evaluated  
22       as a stand-alone enterprise" and states, "At page 3, lines 4-5, Dr. Carlisle says USSC was 'to

---

<sup>12</sup> 100% + 0%, since the investor wants to know the gain above the starting point of 100%



1 be treated as a publicly-traded company for a rate-based return-on-equity proceeding’.” This  
2 partial quotation obscures the actual question and answer, which I quote here:

3 **Q. WHY DID YOU EXAMINE DATA ON COMPANIES WITH**  
4 **TRADED STOCK?**

5 A. First, USSC has asked to be treated as a publicly traded company by  
6 applying for a rate-based return-on-equity proceeding.

7 In other words, I recognized the Company’s desire to receive ROE treatment.  
8 Nowhere does the word or the general equivalent of “stand-alone” appear in the passage from  
9 which Mr. D’Ascendis extracted a partial quotation. When a company asks for such  
10 treatment, I am asked to perform an analysis to make a recommendation regarding the  
11 appropriate ROE. That analysis involves a regulatory fiction of treating a subsidiary or a  
12 privately held company as though it could issue stock. If USSC were truly stand-alone, it  
13 would not have any debt and would be 100% equity. If USSC had not filed for ROE  
14 treatment, this would be an operating margin case. That the Company has any debt at all  
15 means that it is not truly stand-alone.

16 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

17 A. Yes.

Office of Regulatory Staff  
Docket #2013-201-WS  
Utilities Services of South Carolina, Inc.

Surebittal Exhibit DHC-1  
page 1 of 2

**Comparision of Interest-Only and Regular Loan**

<u>Year</u>	<u>Interest</u>	<u>Principal</u>	<u>Total Cash Flow</u>	<u>Remaining Pricipal</u>	<u>Coupon Rate</u>
2006				\$ 180,000,000	
2007	\$ (11,844,000)		\$ (11,844,000)	\$ 180,000,000	6.58%
2008	\$ (11,844,000)		\$ (11,844,000)	\$ 180,000,000	6.58%
2009	\$ (11,844,000)		\$ (11,844,000)	\$ 180,000,000	6.58%
2010	\$ (11,844,000)		\$ (11,844,000)	\$ 180,000,000	6.58%
2011	\$ (11,844,000)		\$ (11,844,000)	\$ 180,000,000	6.58%
2012	\$ (11,844,000)		\$ (11,844,000)	\$ 180,000,000	6.58%
2013	\$ (11,844,000)		\$ (11,844,000)	\$ 180,000,000	6.58%
2014	\$ (11,844,000)		\$ (11,844,000)	\$ 180,000,000	6.58%
2015	\$ (11,844,000)		\$ (11,844,000)	\$ 180,000,000	6.58%
2016	\$ (11,844,000)		\$ (11,844,000)	\$ 180,000,000	6.58%
2017	\$ (11,844,000)	\$ (9,000,000)	\$ (20,844,000)	\$ 171,000,000	6.58%
2018	\$ (11,251,800)	\$ (9,000,000)	\$ (20,251,800)	\$ 162,000,000	6.58%
2019	\$ (10,659,600)	\$ (9,000,000)	\$ (19,659,600)	\$ 153,000,000	6.58%
2020	\$ (10,067,400)	\$ (9,000,000)	\$ (19,067,400)	\$ 144,000,000	6.58%
2021	\$ (9,475,200)	\$ (9,000,000)	\$ (18,475,200)	\$ 135,000,000	6.58%
2022	\$ (8,883,000)	\$ (9,000,000)	\$ (17,883,000)	\$ 126,000,000	6.58%
2023	\$ (8,290,800)	\$ (9,000,000)	\$ (17,290,800)	\$ 117,000,000	6.58%
2024	\$ (7,698,600)	\$ (9,000,000)	\$ (16,698,600)	\$ 108,000,000	6.58%
2025	\$ (7,106,400)	\$ (9,000,000)	\$ (16,106,400)	\$ 99,000,000	6.58%
2026	\$ (6,514,200)	\$ (9,000,000)	\$ (15,514,200)	\$ 90,000,000	6.58%
2027	\$ (5,922,000)	\$ (9,000,000)	\$ (14,922,000)	\$ 81,000,000	6.58%
2028	\$ (5,329,800)	\$ (9,000,000)	\$ (14,329,800)	\$ 72,000,000	6.58%
2029	\$ (4,737,600)	\$ (9,000,000)	\$ (13,737,600)	\$ 63,000,000	6.58%
2030	\$ (4,145,400)	\$ (9,000,000)	\$ (13,145,400)	\$ 54,000,000	6.58%
2031	\$ (3,553,200)	\$ (9,000,000)	\$ (12,553,200)	\$ 45,000,000	6.58%
2032	\$ (2,961,000)	\$ (9,000,000)	\$ (11,961,000)	\$ 36,000,000	6.58%
2033	\$ (2,368,800)	\$ (9,000,000)	\$ (11,368,800)	\$ 27,000,000	6.58%
2034	\$ (1,776,600)	\$ (9,000,000)	\$ (10,776,600)	\$ 18,000,000	6.58%
2035	\$ (1,184,400)	\$ (9,000,000)	\$ (10,184,400)	\$ 9,000,000	6.58%
2036	\$ (592,200)	\$ (9,000,000)	\$ (9,592,200)	\$ -	6.58%
<b>TOTALS</b>	\$ (242,802,000)	\$ (180,000,000)	\$ (422,802,000)		

**Comparison of Interest-Only and Regular Loan**

<u>Year</u>	<u>Interest</u>	<u>Principal</u>	<u>Total Cash Flow</u>	<u>Remaining Pricipal</u>	<u>Coupon Rate</u>	<u>Difference in interest</u>
2006		\$ 180,000,000	\$ 180,000,000	\$ 180,000,000		
2007	\$ (11,844,000)	\$ (6,000,000)	\$ (17,844,000)	\$ 174,000,000	6.58%	\$ -
2008	\$ (11,449,200)	\$ (6,000,000)	\$ (17,449,200)	\$ 168,000,000	6.58%	\$ (394,800)
2009	\$ (11,054,400)	\$ (6,000,000)	\$ (17,054,400)	\$ 162,000,000	6.58%	\$ (789,600)
2010	\$ (10,659,600)	\$ (6,000,000)	\$ (16,659,600)	\$ 156,000,000	6.58%	\$ (1,184,400)
2011	\$ (10,264,800)	\$ (6,000,000)	\$ (16,264,800)	\$ 150,000,000	6.58%	\$ (1,579,200)
2012	\$ (9,870,000)	\$ (6,000,000)	\$ (15,870,000)	\$ 144,000,000	6.58%	\$ (1,974,000)
2013	\$ (9,475,200)	\$ (6,000,000)	\$ (15,475,200)	\$ 138,000,000	6.58%	\$ (2,368,800)
2014	\$ (9,080,400)	\$ (6,000,000)	\$ (15,080,400)	\$ 132,000,000	6.58%	\$ (2,763,600)
2015	\$ (8,685,600)	\$ (6,000,000)	\$ (14,685,600)	\$ 126,000,000	6.58%	\$ (3,158,400)
2016	\$ (8,290,800)	\$ (6,000,000)	\$ (14,290,800)	\$ 120,000,000	6.58%	\$ (3,553,200)
2017	\$ (7,896,000)	\$ (6,000,000)	\$ (13,896,000)	\$ 114,000,000	6.58%	\$ (3,948,000)
2018	\$ (7,501,200)	\$ (6,000,000)	\$ (13,501,200)	\$ 108,000,000	6.58%	\$ (3,750,600)
2019	\$ (7,106,400)	\$ (6,000,000)	\$ (13,106,400)	\$ 102,000,000	6.58%	\$ (3,553,200)
2020	\$ (6,711,600)	\$ (6,000,000)	\$ (12,711,600)	\$ 96,000,000	6.58%	\$ (3,355,800)
2021	\$ (6,316,800)	\$ (6,000,000)	\$ (12,316,800)	\$ 90,000,000	6.58%	\$ (3,158,400)
2022	\$ (5,922,000)	\$ (6,000,000)	\$ (11,922,000)	\$ 84,000,000	6.58%	\$ (2,961,000)
2023	\$ (5,527,200)	\$ (6,000,000)	\$ (11,527,200)	\$ 78,000,000	6.58%	\$ (2,763,600)
2024	\$ (5,132,400)	\$ (6,000,000)	\$ (11,132,400)	\$ 72,000,000	6.58%	\$ (2,566,200)
2025	\$ (4,737,600)	\$ (6,000,000)	\$ (10,737,600)	\$ 66,000,000	6.58%	\$ (2,368,800)
2026	\$ (4,342,800)	\$ (6,000,000)	\$ (10,342,800)	\$ 60,000,000	6.58%	\$ (2,171,400)
2027	\$ (3,948,000)	\$ (6,000,000)	\$ (9,948,000)	\$ 54,000,000	6.58%	\$ (1,974,000)
2028	\$ (3,553,200)	\$ (6,000,000)	\$ (9,553,200)	\$ 48,000,000	6.58%	\$ (1,776,600)
2029	\$ (3,158,400)	\$ (6,000,000)	\$ (9,158,400)	\$ 42,000,000	6.58%	\$ (1,579,200)
2030	\$ (2,763,600)	\$ (6,000,000)	\$ (8,763,600)	\$ 36,000,000	6.58%	\$ (1,381,800)
2031	\$ (2,368,800)	\$ (6,000,000)	\$ (8,368,800)	\$ 30,000,000	6.58%	\$ (1,184,400)
2032	\$ (1,974,000)	\$ (6,000,000)	\$ (7,974,000)	\$ 24,000,000	6.58%	\$ (987,000)
2033	\$ (1,579,200)	\$ (6,000,000)	\$ (7,579,200)	\$ 18,000,000	6.58%	\$ (789,600)
2034	\$ (1,184,400)	\$ (6,000,000)	\$ (7,184,400)	\$ 12,000,000	6.58%	\$ (592,200)
2035	\$ (789,600)	\$ (6,000,000)	\$ (6,789,600)	\$ 6,000,000	6.58%	\$ (394,800)
2036	\$ (394,800)	\$ (6,000,000)	\$ (6,394,800)	\$ -	6.58%	\$ (197,400)
<b>TOTALS</b>	\$ (183,582,000)	\$ (180,000,000)	\$ (363,582,000)	<b>Cost of interest-only</b>		<b>\$ (59,220,000)</b>

**Office of Regulatory Staff**  
**Utilities Services of South Carolina**  
**York Water Company: Selected Financial Data**  
*Docket # 2013-201-WS*

<b>For the Year</b>	<b>2011</b>	<b>2010</b>	<b>2009</b>	<b>2008</b>	<b>2007</b>
Water operating revenues	\$40,629	\$39,005	\$37,043	\$32,838	\$31,433
Operating expenses	<u>20,754</u>	<u>19,238</u>	<u>19,655</u>	<u>18,158</u>	<u>17,333</u>
Operating income	19,875	19,767	17,388	14,680	14,100
Interest expense	5,155	4,795	4,780	4,112	3,916
Other income (expenses), net	<u>-677</u>	<u>-465</u>	<u>-517</u>	<u>-509</u>	<u>-78</u>
Income before income taxes	14,043	14,507	12,091	10,059	10,106
Income taxes	<u>4,959</u>	<u>5,578</u>	<u>4,579</u>	<u>3,628</u>	<u>3,692</u>
Net income	\$9,084	\$8,929	\$7,512	\$6,431	\$6,414

**Per Share of Common Stock**

Book value	\$7.45	\$7.19	\$6.92	\$6.14	\$5.97
Basic earnings per share	0.71	0.71	0.64	0.57	0.57
Cash dividends declared per share	0.5266	0.515	0.506	0.489	0.475
Weighted average number of shares outstanding during the year	12,734,420	12,626,660	11,695,155	11,298,215	11,225,822

**Utility Plant**

Original cost, net of acquisition adjustments	\$278,344	\$269,856	\$259,839	\$245,249	\$222,354
Construction expenditures	9,472	10,541	12,535	24,438	18,154

**Other**

Total assets	\$274,219	\$259,931	\$248,837	\$240,442	\$210,969
Long-term debt including current portion	85,017	85,173	77,568	86,353	70,505

<b><i>Interest Expense/Total Long-Term Debt</i></b>	<b><i>6.06%</i></b>	<b><i>5.63%</i></b>	<b><i>6.16%</i></b>	<b><i>4.76%</i></b>	<b><i>5.55%</i></b>
<b><i>Average Long-Term Debt Expense</i></b>	<b><i>5.63%</i></b>				

Source: York Water Company's Annual Report to the U.S. Securities Exchange Commission for year ending 12/31/11, p.16.

Note: Last row is calculated from cited items in the table; confirmed in 11/15/12 telecon with CFO

## OVERLAP BETWEEN ORS & USSC CEM PROXY GROUP

IN ORS CEM GROUP? USSC'S GROUP  
(1="YES")

1 Actavis, Inc.  
Annaly Capital Mgmt.  
AutoZone Inc.  
1 Baxter Intl Inc.  
1 Berkley (W.R.)  
1 Bristol-Myers Squibb  
Brown & Brown  
Capitol Fed. Finl  
1 ConAgra Foods  
1 DaVita Inc.  
Dun & Bradstreet  
Gallagher (Arthur J.)  
1 J&J Snack Foods  
1 Kroger Co.  
Lancaster Colony  
1 McKesson Corp.  
Mercury General  
Northwest Bancshares  
1 Owens & Minor  
Peoples United Finl  
1 Raytheon Co.  
SAIC, Inc.  
1 Sherwin-Williams  
1 Silgan Holdings  
1 Smucker (J.M.)  
Stericycle Inc.  
Suburban Propane  
1 Waste Connections  
1 Weis Markets

55.2% proportion in ORS group
----------------------------------

Sources: Exhibit DWD-1, Schedule 7, Page 3 of 3  
Exhibit DHC-13